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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KIM, JAE K	

ART UNIT	PAPER NUMBER
2821	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/598,257	HENDRIX, MACHIEL ANTONIUS MARTINUS	
	Examiner	Art Unit	
	JAE K. KIM	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/25/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

Abstract

1. Applicant is reminded of the proper content of an abstract of the disclosure. A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative. The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

   Where applicable, the abstract should include the following:

   (1) if a machine or apparatus, its organization and operation;
   (2) if an article, its method of making;
   (3) if a chemical compound, its identity and use;
   (4) if a mixture, its ingredients;
   (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

3. The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because of extensive mechanical and design details of the apparatus, non-narrative form, and legal phraseology often used in patent claims, such as "means" and "said". Please refer to above requirements and guidelines to construct an appropriate abstract. Correction is required. See MPEP § 608.01(b).

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the

description: Claim 1 refers to a reference number 200 that is not present in any of the drawings.

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, all features in claim 8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

7. In claim 8, the feature of wherein the output branch comprises a transformer driving a rectifier is not shown in the drawings. Appropriate correction is required.

8. Also, minor informalities in the drawings need correction. The drawings are objected to because in Figures 2 and 3 reference numbers 110 and 100 point to the same object.

9. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as

either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112 – Second Paragraph

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. As for claim 6 and 7, the claim language "relative" is a relative term which renders the claim indefinite. The term "relative" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1, 5, 6, 7, 9, 10, 11, and 12 are rejected under 35 U.S.C. 102(b), as being anticipated by Crouse et al. (U.S. 5,434,477), herein referred to as Crouse.

15. As for claim 1, Crouse teaches **a half-bridge inverter** (Crouse, Fig. 5), **a first branch of two controllable switches coupled in series between a first reference node and a second reference node** (Crouse, Fig. 5)**; a second branch of two buffer capacitors coupled in series between said first reference node and said second reference node** (Crouse, Fig. 5)**; an output branch connected between on the one hand a first node between said two controllable switches and on the other hand a second node between said two buffer capacitors** (Crouse, Fig. 5); **a boost converter, having an output connected directly to said first node between said two controllable switches** (Crouse, Fig. 5).

16. As for claim 5, Crouse teaches the above limitations and further teaches **a switch controller is adapted to drive said two switches at a switching frequency well above a mains frequency** (Crouse, Col. 2, Lines 38 - 39). The claim language "**well above**" is not very descriptive given that the claim language "**preferably at a switching frequency not lower than 20 kHz, more preferably at a switching frequency in the order of 40-50 kHz**," is not further limiting and therefore not given any patentable weight. Crouse states an operating frequency of 30 KHz, which examiner considers "well above" mains frequency. Also, the claim language "adapted to" does not further limit the scope of the claim, as this just states an inherent use of the structure.

17. As for claims 6 and 7, both claims disclose subject matter that is inherent in any prior art, such as Crouse, that includes the same structure as the present invention. Also, the claim language "relatively large" is indefinite and vague as discussed in the 112 second rejection above.

18. The limitations of claims 6, **said decoupling capacitor has a relatively large impedance for the mains frequency and a relatively low impedance for the switch operating frequency**, and claim 7, **said inductor has a relatively high impedance for the switch operating frequency and a relatively low impedance for the mains frequency**, is not discussed under the references put forth.

19. The examiner takes Official Notice that the limitations of claims 6, **said decoupling capacitor has a relatively large impedance for the mains frequency and a relatively low impedance for the switch operating frequency**, and claim 7, **said inductor has a relatively high impedance for the switch operating frequency and a relatively low impedance for the mains frequency** are notoriously well known in the art, given the frequency of operation in claim 5.

20. It would have been clear to one having ordinary skill in the art at the time of the invention that impedance or reactance of a capacitor and inductor are based on the formulas $X_C = \frac{1}{2\pi fC}$ and $X_L = 2\pi fL$, respectively; therefore, if the switching frequency is "well above" the mains frequency (claim 5), the reactance of the capacitor will, inherently, have a **relatively large impedance for the mains frequency and a relatively low impedance for the switch operating frequency**. In a similar fashion, the reactance of the inductor will, inherently, have a **relatively**

high impedance for the switch operating frequency and a relatively low impedance for the mains frequency.

21. As for claim 9, Crouse teaches **a switch controller adapted to generate control signals for controlling said two switches to either their conductive or their non-conductive state, the switch controller being adapted to drive the two switches** [with] **pulse width modulation** (Crouse, Fig. 5). Further, the clause "adapted to" does not limit the scope of claim 9, as a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The structure of Crouse, since able to perform PWM is also able to do FM, therefore, Crouse's invention meets claim 9 limitation of using PWM in conjunction with FM.

22. As for claim 10, 11, and 12 the clause "adapted to" does not limit the scope of claim 9, as a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The structure of Crouse, since able to perform all the limitations (simply by the ability to control the switching of the half bridge) on claims 10, 11, and 12, Crouse's invention meets claims 10, 11, and 12.

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crouse, as applied to claim 1 above, in view of Bogdan (6,040,661), herein referred to as Bogdan.

26. As for claim 2, Crouse teaches all the above limitations in claim 1, but does not teach **a series arrangement of a lamp output, a decoupling capacitor and an inductor**. Bogdan teaches **a series arrangement of a lamp output, a decoupling capacitor and an inductor** (Bogdan, Fig. 8). The prior art references teach all of the claimed elements. One of ordinary skill in the art would have recognized that Bogdan's invention relates to limit the current flow and block DC voltage spikes within the lamp (Bogdan, Col. 5, Lines 1 - 19). It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine Bogdan with

Crouse to limit the current flow and block DC voltage spikes within the lamp and thereby minimize switching losses.

27. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crouse, as applied to claim 1 above, in view of Nilssen (4,608,523), herein referred to as Nilssen.

28. As for claim 3, Crouse teaches all the above limitations in claim 1, but does not teach **a series arrangement of an inductor and an AC mains input/output**. Nilssen teaches **a series arrangement of an inductor and an AC mains input/output** (Nilssen, Fig. 1 and 2). The prior art references teach all of the claimed elements. One of ordinary skill in the art would have recognized that Nilssen's invention relates to building an instant start voltage and power factor unity for efficient operation of the lamp pre and post ignition (Nilssen, Col. 3, Lines 7 – 10; Col. 1, Lines 61 - 64). It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine Bogdan with Crouse to further the efficient operation of the lamp.

29. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crouse, as applied to claim 1 above, in view of Bogdan, as applied to claim 2 above, and in further view of Nilssen, as applied to claim 3 above.

30. As for claim 4, Crouse teaches all of the limitations, as applied to claim 1 above, but does not teach **a first series arrangement of a lamp output, a decoupling capacitor and an inductor, and also comprises a second series arrangement of an inductor and an AC mains input/output, said second series arrangement**

being connected in parallel to said first series arrangement. Bogdan and Nilssen teach **a first series arrangement of a lamp output, a decoupling capacitor and an inductor, and also comprises a second series arrangement of an inductor and an AC mains input/output, said second series arrangement being connected in parallel to said first series arrangement** as applied to claims 2 and 3 above. It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine Bogdan and Nilssen with Crouse for the reasons mentioned above.

31. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crouse, as applied to claim 1 above, in view of Powers (4,972,124), herein referred to as Powers.

32. As for claim 8, Crouse teaches all of the limitations, as applied to claim 1 above, but does not teach **the output branch comprises a transformer driving a rectifier**. Powers teaches **the output branch comprises a transformer driving a rectifier** (Powers, Fig. 1, Elements 29 and 34; Col. 4, Line 67 – Col. 5, Line 9). The prior art references teach all of the claimed elements. One of ordinary skill in the art would have recognized that Nilssen's invention relates applying a DC bias to the lamp, requiring a much lower potential to start conduction in the lamp (Powers, Col. 5, Line 9 – Col. 5, Line 13). It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine Powers with Crouse to further the efficient operation of the lamp.

33. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crouse, as applied to claim 1 above, in view of Muljadi et al. (5,747,967), herein referred to as Muljadi.

34. As for claim 13, Crouse teaches all of the limitations, as applied to claim 1 above, but does not teach **the boost converter comprises at least one photo-voltaic cell, a boost inductor having one terminal coupled to an output of the photo-voltaic cell and having its other terminal coupled to a first terminal of a rectifying element, the rectifying element having an output terminal coupled to the output of the boost converter**. Muljadi teaches **the boost converter comprises at least one photo-voltaic cell, a boost inductor having one terminal coupled to an output of the photo-voltaic cell and having its other terminal coupled to a first terminal of a rectifying element, the rectifying element having an output terminal coupled to the output of the boost converter** (Muljadi, Fig. 5). The prior art references teach all of the claimed elements. One of ordinary skill in the art would have recognized that Muljadi's invention relates to acquiring a power supply source from a solar energy and the need to boost that solar energy to a usable level. It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine Muljadi with Crouse to boost a solar energy level to a usable level to drive a load.

35. As for claim 14, Crouse teaches all of the limitations, as applied to claim 1 above, but does not teach **wherein the boost converter further comprises an additional controllable switch connected between on the one hand a node A**

between the boost inductor and the rectifying element and on the other hand the second reference node. Muljadi teaches **wherein the boost converter further comprises an additional controllable switch connected between on the one hand a node A between the boost inductor and the rectifying element and on the other hand the second reference node** (Muljadi, Fig. 5). The prior art references teach all of the claimed elements. It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine Muljadi with Crouse for the reasons mentioned above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAE K. KIM whose telephone number is (571)270-5066. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JKK

/Tuyet Vo/
Primary Examiner, Art Unit 2821
April 25, 2008